भारतीय मानक **IS 1190 : 2023**

Indian Standard

वस्त्रादि — बुनाई के लिए दोहरे तार की हील्ड — विशिष्टि

(चौथा पुनरीक्षण)

Textiles — Twin Wire Healds for Weaving — Specification

(Fourth Revision)

ICS 59.120.30

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June 2023 **Price Group 5**

Textile Machinery and Accessories Sectional Committee, TXD 14

FOREWORD

This Indian Standard (Fourth Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Textile Machinery and Accessories Sectional Committee had been approved by the Textiles Division Council.

Healds are used to control a large number of warp yarns. The upward and downward movements of healds are controlled either by cam or dobby shedding mechanisms. The movement of the healds is not continuous. After reaching the top or bottom position, the healds, in general, remain stationary for some duration. This is known as ‘dwell’. In general, the shed changes after every pick that is the insertion of weft.

This standard was originally published in 1957 and subsequently revised in 1969, 1976 and 1990. This revision has been made in the light of experience gained since its publication and to incorporate the following major changes:

a) Title of the standard has been modified;
b) Material requirement has been modified;
c) Marking, packing and sampling clauses have been modified; and
d) References to Indian standards have been updated.

In formulation of this standard, technical assistance has been derived from ISO 364 : 1983 ‘Textile machinery and accessories — Twin wire healds for weaving machines with heald frames’ issued by the International Organization for Standardization.

The composition of the committee responsible for the formulation of this standard is listed in Annex B.

For the purpose of deciding whether a particular requirement of this standard is complied with the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 2022 ‘Rules for rounding off numerical values (*second revision*)’. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

TEXTILES — TWIN WIRE HEALDS FOR WEAVING — SPECIFICATION

(Fourth Revision)

1 SCOPE

This standard prescribes requirements for twin wire healds with twisted eyelet or inset mail for weaving (excluding jacquard, fancy and jute weaving).

2 REFERENCES

The standards listed in Annex A contain provisions which, through reference in this text, constitute provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of the standards listed in Annex A.

3 NOMENCLATURE

3.1 For the purpose of this standard, the nomenclature as indicated in Fig. 1 and Fig. 2 shall apply.

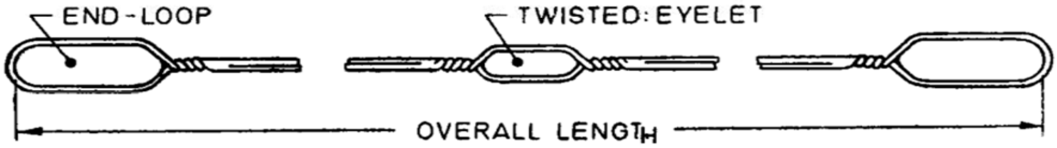

FIG. 1 HEALD WITH OBLONG END LOOP

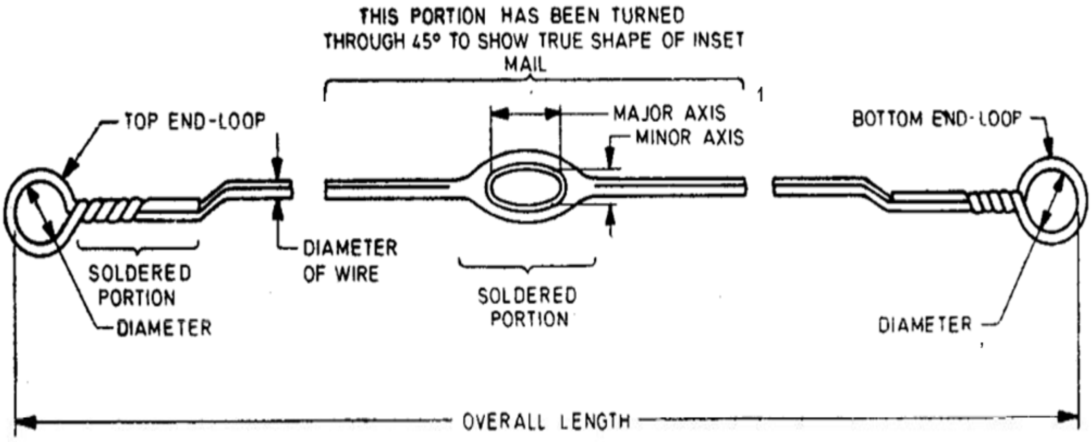

FIG. 2 HEALD WITH ROUND END LOOPS

4 MANUFACTURE

4.1 Material

The wire for manufacture of healds shall be drawn from carbon steel wire rods having carbon content between 0.35 percent to 0.65 percent (*see* IS 7904).

4.1.1 The diameter of wire used for manufacture of healds shall be 0.27, 0.30, 0.40, 0.45, 0.50, 0.56, 0.71, 0.91 or 1.00 mm subject to the following tolerances:

Wire Diameter *(mm)*	*Tolerance* *(mm)*
Up to 0.55	± 0.01
Above 0.55	± 0.02

4.1.2 The tensile strength of wire in the finished heald state shall not be less than 833 MPa (85 kgf/mm^2).

4.2 Plating/Soldering

The plating/soldering of healds shall be lustrous, smooth and free from cracks and other flaws which may cause breakage of yarn. The groove formed by two adjoining pieces of wire shall not be filled up by plating. The purity of the tin used for soldering should be preferably as follows:

	Tin Purity Percent
Twisted portions near top and bottom end loops	50
Inset mail or twisted eyelet and the adjoining portions	95

4.3 Workmanship

4.3.1 The inset shall be inserted between the two wires of the heald and the wires shall be tightly wound round inset mail with or without twist as specified in the contract. The plane of the inset mail or twisted eyelet shall be at an angle of 45 ± 5° to the plane of end loop unless otherwise specified. If the wire heald is held vertically with painted end upward, the minor axis of the heald shall be in the 'Z' direction (*see* Fig. 3).

4.3.2 The heald shall be perfectly smooth and free from sharp corners so that when the heald is rubbed with glossy silk, the silk shall not get caught at the mail and the wire.

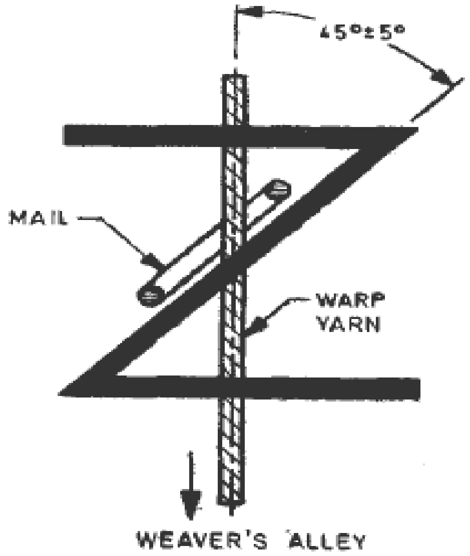

FIG. 3 DIRECTION OF TWIST OF MAIL EYE

5 DIMENSIONS

5.1 Twisted Eyelet

5.1.1 The twisted eyelet shall be hexagonal with major and minor axis as specified subject to a tolerance of ± 0.4 mm and ± 0.2 mm respectively.

5.1.2 Twisted eyelets with the following major and minor axis are in common use:

a) 5 mm × 1.3 mm;
b) 6 mm × 1.5 mm;
c) 6.5 mm × 2 mm; and
d) 8 mm × 2.8 mm.

5.2 Inset Mails

The major and minor axis of inset mail specified shall be subject to a tolerance of ± 0.2 mm. Inset mails with the following major and minor axis are in common use:

Major Axis (mm)	*Minor Axis (mm)*	*Code No.*
2.6	0.9	1 010 R
3.2	1.3	1 015 R
4.0	1.5	1 020 R
5.2	2.3	355 R
5.6	2.7	380 R
6.6	3.9	1 080 R
8.0	4.2	390 R
10.0	6.3	450 R

NOTE — Code No. is given for information only.

5.3 End Loops

End loops of the healds shall be either round having inside diameter of 6.0 mm, 10.0 mm or 14.0 mm subject to a tolerance of ± 0.5 mm or oblong having major axis of (16.0 ± 1.0) mm and minor axis of (5.0 ± 0.2) mm.

5.4 Overall Length

The overall length shall be 240, 260, 280, 300, 330, 380, 420, 450, 480 or 520 mm (unless otherwise specified) subject to a tolerance of ± l mm, excluding the wire thickness at the end loops.

6 DESIGNATION

The twin wire heald shall be designated as follows:

Wire diameter (mm) × length (mm) × end loop type and size (mm) × type of inset mail or twisted eyelets and size (mm).

7 MARKING

7.1 Top end loops shall be distinctly painted to avoid the healds being put on heald bar upside down.

7.2 Preferably 500 wire healds threaded with a cotton yarn of adequate strength shall form a bundle. A unit or more of such bundles shall be packed in suitable waterproof package as specified in the contract.

7.3 Each case/carton of heald shall also bear the following information:

a) Manufacturer’s name, initials or trade-mark, if any;
b) Dimension of wire diameter;
c) Material of heald wire;
d) Number of heald wire;
e) Gross and net mass;
f) Lot/batch number;
g) Country of origin; and
h) Any other information required by the law in force and/or by the buyer.

7.4 BIS Certification Marking

The product(s) conforming to the requirements of this standard may be certified as per the conformity assessment schemes under the provisions of the *Bureau of Indian Standards Act*, 2016 and the Rules and Regulations framed thereunder, and the products may be marked with the Standard Mark.

8 PACKING

A bundle of heald twin wire shall be packed in cases/cartons strong enough to withstand normal hazards of storage and transport. Details of the packing shall be as agreed to between the buyer and the seller. Packaging of the product shall be such as to maintain the integrity of the product throughout its shelf life.

9 SAMPLING

9.1 All the twin wire healds manufactured from the same raw material delivered to a buyer against a despatch note shall constitute a lot.

9.2 The conformity of the lot to the requirements of this standard shall be determined on the basis of the tests carried out on the samples selected from it.

9.3 Unless otherwise agreed to between the buyer and the seller, the number of twin wire healds to be selected at random from a lot shall be in accordance with co1 (2), col (3) and col (5) of Table 1 [*see also* IS 2500 (Part 1)].

Table 1 Sample Size and Permissible Number of Nonconforming Twin Wire Healds
(*Clause* 9.3)

Sl No. (1)	Lot size (2)	No. of Twin Wire Healds to be Selected for Testing Dimensions (3)	Permissible No. of Non-Conforming Twin Wire Healds amongst those Selected in Col 3 (4)	No. of Twin Wire Healds to be Selected for Determining Mass from amongst those Selected in Col 3 (5)
i)	Up to 150	8	1	3
ii)	151 to 280	13	1	3
iii)	281 to 500	20	2	3
iv)	501 and above	32	3	5

9.4 The number of twin wire healds to be tested and criterion for conformity for each of the characteristics shall be as follows:

Characteristic	*No. of Picking Sticks to be Tested*	*Criterion for Conformity*
Dimensions	According to col 3 of Table 1	Non-conforming healds not to exceed the corresponding number given in co1 4 of Table 1
Material and All other requirements	According to co1 5 of Table I	Each observed value satisfies the requirements

ANNEX A
(*Clause 2*)

LIST OF REFERRED INDIAN STANDARDS

IS No.	*Title*
IS 2500 (Part 1) : 2000	Sampling procedures for inspection by attributes: Part 1 Sampling schemes indexed by acceptance quality limit (AQL) for lot-by-lot inspection
IS 7904 : 2018	High carbon steel wire rods — Specification

ANNEX B

(*Foreword*)

COMMITTEE COMPOSITION

Textile Machinery and Accessories Sectional Committee, TXD 14

Organization	*Representative(s)*
Central Manufacturing Technology Institute, Bengaluru	Dr Nagahanumaian (***Chairperson***)
ATE Enterprises Private Limited, New Delhi	Shri Abhijit Kulkarni Shri Anil Kumar Sharma (*Alternate*)
Amritlakshmi Machine Works, Mumbai	Shri N. K. Brahmachari Shri N. K. Raut (*Alternate*)
Bhowmick Calculator, Kolkata	Shri Goutam Bhowmick Shri Vivekananda Bhowmick (*Alternate*)
Central Manufacturing Technology Institute, Bengaluru	Shri B. R. Mohanraj Shri K. Saravanan (*Alternate*)
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Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

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